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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Robert Berliner
Fulbright & Jaworski LLP
865 South Figueroa Street 28th Floor
Los Angeles, CA 90017

EXAMINER	
CHAWAN, VIJAY B	
ART UNIT	**PAPER NUMBER**
2654	

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/831,843	GOTTESMAN, ODED
	Examiner	Art Unit
	Vijay B. Chawan	2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,17,18 and 22-31* is/are rejected.

7)☒ Claim(s) *15,16 and 19-21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

1. Claims 15-16 and 19-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Objections

2. Claim 1 is objected to because of the following informalities: line 2 in claim 1 has the words "said signals" repeated. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-13, 14, 17-18, 22-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Kleijn (5,517,595).

As per claims 1 and 3, Kleijn teaches the method for interpolative coding input signals at low data rates in which there is significant pitch transitivity, and wherein said signals may have a slowly evolving waveform, the method incorporating at least one of the following steps:

(a) analysis-by-synthesis vector-quantization of the slowly evolving waveform (Col.2, lines 52-56);

(b) analysis-by-synthesis quantization of the dispersion phase (Col.2, lines 52-56);

(c) locking onto the most probable pitch period of the signal using both a spectral domain pitch search and a temporal domain pitch search (Col.4, lines 1-7, Col.5, 14-23);

(d) incorporating temporal weighting in the analysis-by-synthesis vector quantization of the signal gain (Col.10, lines 52-60);

(e) applying both high correlation and low correlation synthesis filters to a vector quantizer codebook in the analysis-by-synthesis vector quantization of the signal gain whereby to add self correlation to the codebook vectors (Col.5, line 62 – Col.6, line 50);

(f) using each value of gain I the analysis-by-synthesis vector-quantization of the signal gain (Col.5, line 62 – Col.6, line 50); and,

using a coder in which a plurality of bits therein are allocated to the slowly evolving waveform phase (Col.5, line 62 – Col.6, line 50).

As per claim 2, Kleijn teaches the method of claim 1, in which said signal is speech (Col3, lines 65-67).

As per claim 4, Kleijn teaches the method of claim 1, in which, in the step of analysis-by-synthesis vector quantization of the slowly evolving waveform, distortion is reduced in the signal by obtaining the accumulated weighted distortion between an original sequence of waveforms and a sequence of quantized and interpolated waveforms (Col.11, line 60 –Col.12, line 52).

As per claim 5, Kleijn teaches the method of claim 1 including providing at least one codebook containing magnitude and phase information for predetermined waveforms, and in which the step of analysis-by-synthesis quantization of the dispersion phase is conducted by crudely aligning the linear phase of the input, then iteratively shifting said crudely aligned linear phase input, comparing the shifted input to a plurality of waveforms reconstructed from the magnitude and phase information contained in said at least one codebook, and selecting the reconstructed waveform that best matches one of the iteratively shifted inputs (Col.13, lines 45-65, Col.14, lines 15-35).

As per claim 6, Kleijn teaches the method of claim 1, in which, in the method of searching the temporal domain pitch in said step of locking onto the most probable pitch period of the signal, comprises defining a boundary for a

segment of said temporal domain pitch, selecting the best boundary and maximizing the similarity by iteratively shifting the segment, and by shrinking and expanding the segment (Col.13, line 45 – Col.14, line 61).

As per claim 7, Kleijn teaches the method of claim 1, in which, the spectral domain pitch and temporal domain pitch searches, in said step of locking onto the most probable pitch period of the signals, are conducted respectively at 100 Hz and 500 Hz (Col.10, lines 24-29).

As per claim 8, Kleijn teaches the method of claim 1, in which, the step of the temporal weighting in the analysis-by-synthesis vector quantization of the signal gain is changed as a function of time whereby to emphasize local high energy events in the input signal (Col.14, lines 42-46).

As per claim 9, Kleijn teaches the method of claim 1, in which, selection between the high and low correlation synthesis filters in the analysis-by-synthesis vector quantization of the signal gain is made to maximize similarity between the gain waveform and a codebook waveform (Col.14, lines 50-61).

As per claim 10, Kleijn teaches the method of claim 1, wherein each value of gain in the analysis-by-synthesis vector quantization of the signal gain is used to obtain a plurality of shapes, each composed of a predetermined number of values, and comparing said shapes to a vector quantized codebook of shapes, each having said predetermined number of values (Col.17, lines 31-56).

As per claim 11, Kleijn teaches a method for interpolative coding input signals at low data rates in which said signals have a slowly evolving waveform, the method incorporating analysis-by-synthesis vector quantization of the slowly evolving waveform (Col.2, lines 36-65).

As per claim 12, Kleijn teaches the method of claim 1, in which, distortion is reduced in the signal by obtaining the accumulated weighted distortion between an original sequence of waveforms and a sequence of quantized and interpolated waveforms (Col.2, lines 36-65).

As per claim 13, Kleijn teaches a method for interpolative coding at low data speeds in which the signal has a lowly evolving waveform having a dispersion phase, the method incorporating analysis-by-synthesis quantization of the dispersion phase (Col.2, lines 36-65).

As per claim 14, Kleijn teaches the method of claim 13, including providing at least one codebook containing magnitude and phase information for predetermined waveforms, and in which the step of analysis-by-synthesis quantization of the dispersion phase is conducted by crudely aligning the linear phase of the input, then iteratively shifting said crudely aligned linear phase input, comparing the shifted input to a plurality of waveforms reconstructed from the magnitude and phase information contained in said at least one codebook, and selecting the reconstructed waveform that best matches one of the iteratively shifted inputs (Col.13, lines 45-65, Col.14, lines 15-35).

As per claim 17, Kleijn teaches a method for interpolative coding input signals at low data rates, comprising locking onto the most probable pitch period of the signal using both a spectral domain pitch search and a temporal domain pitch search (Col.4, lines 1-7, Col.5, lines 14-23).

As per claim 18, Kleijn teaches the method of claim 17, in which the method of searching the temporal domain pitch comprises defining a boundary for a segment of said temporal domain pitch, selecting the location of the boundaries that maximize the similarity by iteratively shrinking and expanding the segment and by shifting the segment (Col.10, lines 52-60).

As per claim 22, Kleijn teaches a method for interpolative coding input signals at low data speeds, comprising incorporating temporal weighting in the analysis-by-synthesis vector quantization of the signal gain (Col.5, line 62 – Col.6, line 50).

As per claim 23, Kleijn teaches the method of claim 22, in which the temporal weighting is changed as a function of time whereby to emphasize local high energy events in the input signals (Col.14, lines 42-46).

As per claim 24, Kleijn teaches a method for interpolative coding input signals at low data speeds, comprising applying both high correlation and low correlation synthesis filters to a vector quantizer codebook in the analysis-by-synthesis vector quantization of the signal gain whereby to add self correlation to the codebook vectors (Col.2, lines 36-62, Figures, 10, 11, 13, 14).

As per claim 25, Kleijn teaches the method of claim 24, in which selection between the high and low correlation synthesis filters is made to maximize similarity between the signal waveform and a codebook waveform (Col.14, lines 50-61).

As per claim 26, Kleijn teaches a method for interpolative coding input signals at low data speeds, comprising using each value of gain in the analysis-by-synthesis vector quantization of the signal gain (Fig.14, item 501).

As per claim 27, Kleijn teaches the method of claim 26, wherein each value of gain is used to obtain a plurality of shapes, each composed of a predetermined number of values, and comparing said shapes to vector quantized codebook of shapes, each having said predetermined number of number (Col.17, lines 31-56)

As per claim 28, Kleijn teaches the method of claim 27, in which said predetermined number of number of values is in the range of 2 to 50 (Col.13, lines 31-33).

As per claim 29, Kleijn teaches the method of claim 28, in which said predetermined number of number of values is in the range of 5 to 50 (Col.13, lines 31-33).

As per claim 30, Kleijn teaches a method for interpolative coding input signals at low data speeds in which said signals have a slowly evolving waveform, comprising using a coder in which a plurality of bits therein are allocated to the slowly evolving waveform phase (Col.14, lines 8-61, Col, lines 16-27).

As per claim 31, Kleijn teaches the method of claim 30 in which 4 bits are allocated to the slowly evolving waveform phase in the coder (Col.16, lines 16-27).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nakata et al., (4,653,098) teach a method and apparatus for extracting pitch in a speech signal.

Tanaka et al., (5,086,471) teach a gain-shape vector quantization apparatus.

Udaya Bhaskar et al., (6,418,408) teach a frequency domain interpolative speech codec system.

Udaya Bhaskar et al., (6,493,664) teach a spectral magnitude modeling and quantization in a frequency domain interpolative speech codec system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vijay B. Chawan whose telephone number is (703) 305-3836. The examiner can normally be reached on Monday Through Thursday 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The

fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vijay B Chawan

Vijay B. Chawan
Primary Examiner
Art Unit 2654

Vbc
12/8/04

VIJAY CHAWAN
PRIMARY EXAMINER